

TABLE 1

Mass Percentage	Paint A	Paint B	Paint C
Styrene Acrylate Resin Varnish	36	36	36
1/2 Cellulose Acrylate Butyrate (20%)	25	-	-
1/4 Nitrocellulose Varnish (25%)	-	20	-
Vinyl Acetate Vinyl Chloride Copolymerization Resin Varnish	-	-	25
Almi Paste	10	10	10
Ethyl acetate	15	15	15
Butanol	10	10	10
MIBK	4	4	4
Leveling Agent	0.3	0.3	0.3
Antifoamer	0.1	0.1	0.1
Thinner	100	100	100

TABLE 2

Material	Test Piece	ΔL	Δa	Δb	ΔE
ABS	Unused Material	0 set	0 set	0 set	0 set
	Paint A	+0.37	+0.05	-0.57	0.68
	Paint B	-8.56	+0.87	+25.23	26.65
	Paint C	-5.67	+0.22	+16.00	16.97
HIPS	Unused Material	0 set	0 set	0 set	0 set
	Paint A	-0.15	-0.22	+0.61	0.62
	Paint B	-7.06	+0.67	+20.60	21.78
	Paint C	-9.41	-0.42	+12.46	15.16

Note: The color of the unused material was set as ZERO.

TABLE 3

Evaluation Item	Sample A	Sample B	Sample C
Izod Impact Strength	16.8	22.1	16.6

TABLE 4

Evaluation Item	Sample A	Sample B	Sample C
Izod Impact Strength	6.8	8.3	6.6

TABLE 5

Cellulose derivative	Viscosity (sec)	Acetyl group content (%)	Butyryl group content (%)	Propionyl group content (%)	Hydroxyl group content (%)	Melting range (°C)	T _g (°C)
CAB-1	0.01	2.0	53.0		1.5	127-142	85
CAB-2	1.9	3.0	50.0		1.7	135-150	115
CAB-3	0.5	13.5	38.0		1.3	155-165	130
CAB-4	0.1	17.5	32.5		1.3	165-175	127
CAP-1	0.2	0.6		42.5	5.0	188-210	159
CAP-2	0.4	2.5		45.0	2.6	188-210	142
Cellulose nitrate-1	1/4						
Cellulose nitrate-2	20						

TABLE 6

Raw materials (wt %)	Paint A	Paint ①	Paint ②	Paint ③	Paint ④	Paint ⑤	Paint ⑥	Paint ⑦	Paint ⑧
Styrene modified acrylic resin 50 wt% varnish *1	45	45	45	45	45	45	45	45	45
Cellulose derivatives	CAB-1*2	0	20	0	0	0	0	0	0
	CAB-2*3	0	0	20	0	0	0	0	0
	CAB-3*4	0	0	0	20	0	0	0	0
	CAB-4*5	0	0	0	0	20	0	0	0
	CAP-1*6	0	0	0	0	0	20	0	0
	CAP-2*7	0	0	0	0	0	0	20	0
	Cellulose nitrate -1*8	0	0	0	0	0	0	0	20
	Cellulose nitrate -2*9	0	0	0	0	0	0	0	0
	Adipate ester*10	5	5	5	5	5	5	5	5
	Almi paste*11	10	10	10	10	10	10	10	10
Ethyl acetate	10	10	10	10	10	10	10	10	10
Butanol	5	5	5	5	5	5	5	5	5
MIBK	5	5	5	5	5	5	5	5	5
Leveling agent*12	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
The sum total	80.3	100.3	100.3	100.3	100.3	100.3	100.3	100.3	100.3

*1: Styrene modified acrylic resin whose name is ACRYDIC A-157 was manufactured by DAINIPPON INK AND CHEMICALS. INCORPORATED.

*2 to 7 : Cellulose derivatives, manufactured by EASTMAN CHEMICAL COMPANY, were dissolved into ethyl acetate / MIBK = 1/1 solvent.

*8 and 9: Cellulose nitrate was manufactured by Asahi Kasei corporation.

*10: Adipate ester whose name is HORISYZER-W-1820 was manufactured by DAINIPPON INK AND CHEMICALS. INCORPORATEI

*11: Almi paste whose name is SL440EB was manufactured by SHOWA ALUMINIUM K.K..

*12: Leveling agent whose name is BYK-310 was manufactured by BYK CHEMICAL Inc.

TABLE 7

Resin	Paint ①	Paint ②	Paint ③	Paint ④	Paint ⑤	Paint ⑥	Paint ⑦	Paint ⑧
PS	O	O	O	O	O	O	O	O
ABS	O	O	O	O	O	O	O	O

Note

O: Good adhesion

TABLE 8

Resin	Items	Paint ①	Paint ②	Paint ③	Paint ④	Paint ⑤	Paint ⑥	Paint ⑦	Paint ⑧
PS	Yellowing color	○	○	○	○	○	○	x	x
	Silver	○	○	○	○	○	○	x	○
ABS	Yellowing color	○	○	○	○	○	○	x	x
	Silver	○	○	○	○	○	○	x	○
Recycle evaluation		○	○	○	○	○	○	x	x

Notes

○ : Good recyclable resin

x : Not good recyclable resin

TABLE 9

Resin	No paint	Paint A	Paint ①	Paint ②	Paint ③	Paint ④	Paint ⑤	Paint ⑥	Paint ⑦	Paint ⑧
PS	8.6	8.4	8.4	8.5	8.3	8.4	8.5	8.5	8.3	8.2
ABS	19.6	19.5	19.3	19.6	19.6	19.5	19.3	19.2	18.9	19.1

Unit: kg/cm²

Notes

PS: Unnotched

ABS: Notched